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CENTRAL INTELLIGENCE AGENCY

WASHINGTON, D.C. 20505

14 September 1977

MEMORANDUM FOR: The Director of Central Intelligence

FROM : William W. Wells
Deputy Director for Operations

SUBJECT : WARSAW PACT JOURNAL: From the Experience of
the Actions of Rear Services Units and
Facilities in the TRANZIT-74 Exercise

1. The enclosed Intelligence Information Special Report is part of a series now in preparation based on articles from a SECRET Soviet publication called Information Collection of the Headquarters and the Technical Committee of the Combined Armed Forces. This article examines a variety of tactical-special exercises carried out in the Bulgarian Army during the TRANZIT-74 command-staff rear services exercise aimed at ensuring the successful accomplishment of tasks of materiel, medical, transport, and technical support of troops in an offensive operation. Among the matters discussed were organizing the delivery of materiel to the troops, refueling on the march, transferring missile propellant from the delivery transport of a front, setting up and operating a maritime loading and unloading area, eliminating the aftereffects of an enemy nuclear attack, organizing medical treatment for the wounded, and restoring disrupted lines of transportation in the rear of a front. This journal is published by Warsaw Pact Headquarters in Moscow, and it consists of articles by Warsaw Pact officers. This article appeared in Issue No. 8, which was published in 1975.

2. Because the source of this report is extremely sensitive, this document should be handled on a strict need-to-know basis within recipient agencies. For ease of reference, reports from this publication have been assigned the

Codeword

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Page 1 of 33 Pages

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Intelligence Information Special Report

Page 3 of 33 Pages

COUNTRY BULGARIA/WARSAW PACT

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SUBJECT

WARSAW PACT JOURNAL: From the Experience of the Actions of Rear Services Units and Facilities in the TRANZIT-74 Exercise

SOURCE Documentary

Summary:

The following report is a translation from Russian of an article from a SECRET Soviet publication called Information Collection of the Headquarters and the Technical Committee of the Combined Armed Forces. This journal is published by Warsaw Pact Headquarters in Moscow, and it consists of articles by Warsaw Pact officers. This article was written by General-Mayor V. Semennikov and Colonel V. Brazhnik. This article examines a variety of tactical-special exercises carried out in the Bulgarian Army during the TRANZIT-74 command-staff rear services exercise aimed at ensuring the successful accomplishment of tasks of materiel, medical, transport, and technical support of troops in an offensive operation. Among the matters discussed were organizing the delivery of materiel to the troops, refueling on the march, transferring missile propellant from the delivery transport of a front, setting up and operating a maritime loading and unloading area, eliminating the aftereffects of an enemy nuclear attack, organizing medical treatment for the wounded, and restoring disrupted lines of transportation in the rear of a front. This article appeared in Issue No. 8, which was published in 1975.

End of Summary

Comment:

General-Mayor V. Semennikov also wrote "Control of the Rear Services of Coalition Formations in an Offensive Operation" in Issue No. 11 for 1976 of the Information Collection

The names of authors are given in Russian transliteration.

TS #778500
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Page 4 of 33 Pages

From the Experience of the Actions of Rear Services
Units and Facilities in the TRANZIT-74 Exercise

by

General-Mayor V. SEMENNIKOV,
Chief of the Directorate of the Operational Rear and
Theaters of Military Operations of the Staff of the
Combined Armed Forces

and

Colonel V. BRAZHNIK,
Deputy Chief of the Branch of Theaters of Military
Operations and Transportation

In June 1974 a combined operational command-staff rear services exercise of the rear services control organs of the Bulgarian People's Army, the Army of the Socialist Republic of Romania, and the Soviet Army was conducted under the code name TRANZIT-74.

During the exercise working out of matters of control and checking the realism of operational rear services calculations were done in 23 tactical-special exercises with units and rear services facilities of the Bulgarian People's Army.

The operational situation of each tactical-special exercise was in conformity with the overall concept of the TRANZIT-74 exercise and was directed first of all toward ensuring the most instructive and complete accomplishment by the staffs of the principal tasks of materiel, medical, transport, and technical support of the troops in an offensive operation.

The subjects of the tactical-special exercises were notable for their variety and included the matters of organizing the delivery of materiel to the troops, refueling on the march, transferring missile propellant from the delivery transport of a front, setting up and operating a maritime loading and unloading area, eliminating the aftereffects of an enemy nuclear attack, organizing medical treatment for the wounded, and restoring disrupted lines of transportation in the rear of a front.

TS # 778500
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Page 5 of 33 Pages

Materiel support of the troops was worked out in a tactical-special exercise with a forward front base. This exercise was conducted under conditions in which the units and facilities of the forward front base, having completed their full mobilization and become integrated, had initiated their preparations to move to new areas in order to support the troops with materiel and technical means during the offensive operation.

For the exercise there were allocated from the complement of the base POL and ammunition depots, a mechanized field bakery, and a mechanized field slaughterhouse.

At the POL depot diesel fuel was issued on a massive scale (Figure 1).

The technical equipping of the depot made it possible for us to refuel 24 trucks at one time, allowing us to load up in 17 minutes a motor transport company made up of 48 trucks.

This performance by the depot was achieved by introducing a streamlined technological arrangement and appropriate technical equipping.

The technological arrangement included six gantries having four hydrants each and also six pipelines with PSG-160 fuel pumping stations to feed fuel to the gantries.

Control of the massive issuing of fuel was effected by a central control point through control check points and separate posts.

Figure 2 shows one of the sections equipped for the massive issuing of fuel.

At the artillery depot, extensively using various means of mechanized loading work (battery-driven trucks, hoists, chain conveyors, roller conveyors, hand carts, etc.), we organized the issuing of ammunition to motor transport in accordance with a previously prepared hourly schedule. For example, ammunition was loaded at the same time at 27 work sites. This permitted us to load up a motor transport company (54 trucks) in 30 minutes and in total, we expended from 40 to 50 minutes in receiving, loading, forming up, and dispatching one company.

TS # 778500

Copy # 2

TOP SECRET

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Page 6 of 33 Pages

With the technological loading arrangement we had developed for every depot, it took a working party (four to five men) with mechanized means 15 to 20 minutes to load up a five-ton truck with ammunition in boxes.

Figure 3 depicts the loading of ammunition using a forklift.

To control the loading work and to monitor and record the movement of ammunition, the dispatcher at the control point had an hourly chart of the admissions of unloaded motor transport, a list of the arriving trucks and the loaded vehicles, and an account of the operational record of the ammunition. A separate sheet was filled out for each truck to be loaded.

In a tactical-special exercise with the rations service facilities we developed a production-line process for the mechanized field slaughterhouse and the mechanized field bakery. The technical equipping of the slaughterhouse ensured the processing of 10 to 12 tons of meat in 16 hours. The time required to set it up (to dismantle it) was three hours.

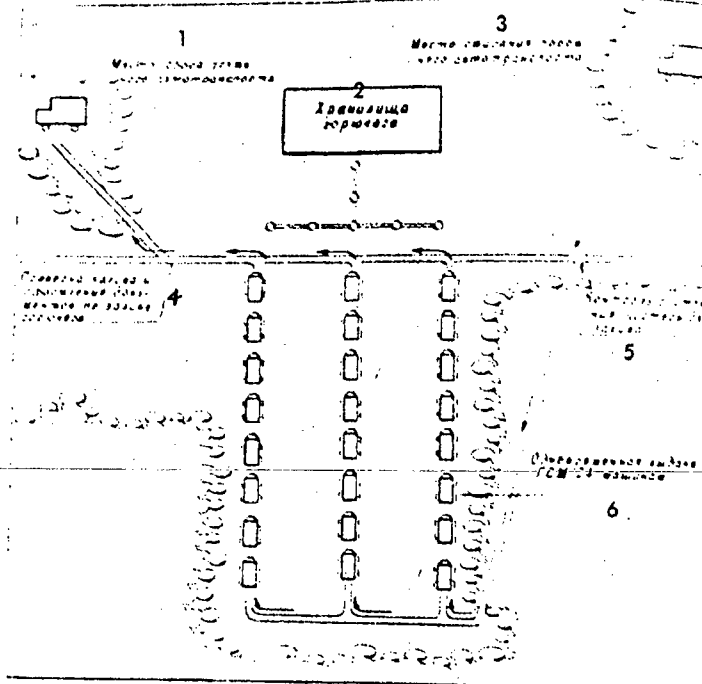
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Page 7 of 33 Pages

Figure 1. The organization of the massive issuing of fuel at the depot



- Legend:
- 1 - Assembly area for loaded motor transport
 - 2 - Fuel depot
 - 3 - Waiting area for empty motor transport
 - 4 - Checking the filling up and drawing up the documents on fuel loading
 - 5 - Checking the condition of the fuel tanks for loading
 - 6 - Fuel pumping stations issuing simultaneously to 24 trucks

TS # 778500
Copy # 2

~~TOP SECRET~~

~~TOP SECRET~~

Page 8 of 33 Pages

Figure 2. A section for the massive issuing of fuel to motor transport



Figure 3. Loading ammunition with a forklift



TS # 778500
Copy # 2

~~TOP SECRET~~

~~TOP SECRET~~

Page 9 of 33 Pages

During this exercise various samples of rations were demonstrated as well as plastic foam containers and packages. The containers, capable of holding one day's ration for a company, ensure the preservation of frozen meat for a period of two full days and are used to ship meat products. The rations packages of the one day's ration for a battalion considerably speed up the loading and unloading of the rations being transported.

The mechanized field bakery is capable of baking 18 to 20 tons of bread a day. The dough preparation and formulation technique enables us to bake bread not only during a halt but also when moving. Diesel fuel is used to heat the ovens, which are mounted on two-axle truck trailers.

The time required to set up (take down) the bakery is 50 to 60 minutes.

The tactical-special exercises with units and facilities of the forward front base confirmed the need to prepare on a wide frontage the issuing (receiving) of materiel at the depot, to develop technological arrangements for loading (unloading) using mechanized means, to develop the package-and-container storage of materiel, and to develop and use available organizational and technological reserves so as to increase the materiel shipping and receiving capabilities of the depots.

To the problems of refueling subunits on the march and delivering missile propellant we devoted two tactical-special exercises.

The refueling of a tank company (10 T-55 tanks) during a march was carried out using two ZIL-157K fuel supply vehicles and one truck with sides carrying barrels (Figure 4). A refueling with the dispensing of 4,000 liters of diesel fuel required 10 minutes (the norm is 12 minutes).

TS # 778500
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Page 10 of 33 Pages

Figure 4. Refueling a tank company on the march



TS # 778500
Copy # 2

~~TOP SECRET~~

~~TOP SECRET~~

Page 11 of 33 Pages

The delivery of special fuel was carried out by a front shipment company using transportation of the mobile missile-technical base (Figure 5). The deployment of the company from the march and the dispensing of 18 tons of oxidant and 12 tons of propellant was effected in 25 minutes (the norm is 30 minutes).

Tactical-special exercises on the loading and unloading of materiel, combat equipment, and wounded shipped by sea were carried out in a situation where through movement on the land lines of transportation had been disrupted owing to the enemy's employment of nuclear weapons. The aim of these exercises was to work out the actions of personnel in a maritime loading-and-unloading area.

The area set up for the accomplishment of these tasks included:

- a port with a berthing wall which provided for the mooring of not more than two ships;
- two sectors for unloading from a roadstead to an open beach;
- forces securing the loading area from the sea, and air defense means;
- auxiliary means (six landing ships for the roadstead unloading and fire-fighting and towing launches).

Approximately 600 personnel, 58 cargo and special trucks, and 17 seagoing vessels and ships were brought in for the exercise.

The loading of combat equipment and materiel was carried out in a port using port and ship mechanized cargo handling means.

Loading was carried out in a dry-cargo transport equipped with cargo booms having 30-ton and 10-ton lifting capacities and six booms with a 3-ton capacity each. A transport having an overall displacement of 3,000 tons is capable of taking on board from 38 to 54 different pieces of combat equipment.

In the course of the exercises 24 pieces of combat equipment (armored personnel carriers, 122-mm howitzers with their prime

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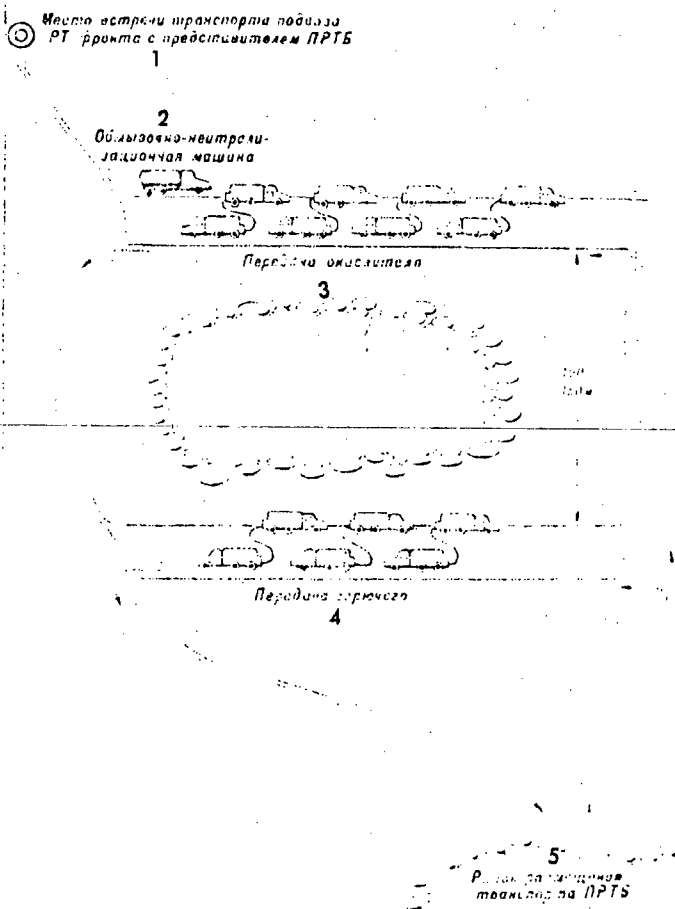
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Page 12 of 33 Pages

movers, trucks) and 90 tons of materiel supplies were loaded on.

Figure 5. Organization of the delivery of missile propellant from the front shipment company to transportation of the mobile missile-technical base



- Legend:
- 1 - Place where the transport delivering missile propellant of the front contacts a representative of the mobile missile-technical base
 - 2 - Washing down and neutralizing truck
 - 3 - Transferring the oxidant
 - 4 - Transferring the propellant
 - 5 - Disposition area of the transport of the mobile missile-technical base

TS # 778500

Copy # 2

~~TOP SECRET~~

~~TOP SECRET~~

Page 13 of 33 Pages

Before initiating the loading, combat equipment and supply cargoes were concentrated in waiting areas located three to five kilometers away from the port.

Equipment was called up and materiel was delivered upon orders of the loading director, thereby ensuring that the loading was approached in a planned manner and that the equipment was not permitted to accumulate at the mooring site.

Loading proceeded along two lines of cargo. Equipment was loaded into the ship's holds using a 15-ton portal crane and the 30-ton cargo boom of the transport (Figure 6) and cargo was loaded on pallets and in standard packages using the 3-ton ship cargo booms.

Figure 6. Loading equipment into the transport with a portal crane



TS # 778500
Copy # 2

~~TOP SECRET~~

~~TOP SECRET~~

Page 14 of 33 Pages

To load one armored personnel carrier, eight to ten minutes were expended using the portal crane, and 12 to 15 minutes using the ship's boom.

The output of one cargo line in the loading of materiel on pallets was 30 to 35 tons per hour.

During the exercise an attachment was used to fasten an armored personnel carrier when it was being hoisted by a crane or a cargo boom (Figure 7). It consists of two cross beams joined by a hoisting sling. The upper beam ensures that the sling is spread and the lower one is set up under the stern portion of the armored personnel carrier. The bow portion is fastened with two slings coming off the shackle to which is fastened the hook of the hoisting mechanism. This design permits a work team numbering four men to reliably fasten up one armored personnel carrier in a period of one minute.

We also worked out the evacuation of the wounded from a hospital ship in port using mechanized means of the ship and of the port and medical motor transport.

A passenger ship was refitted as a hospital ship. In the upper deck compartments were arranged a sorting and dressing section, an anti-shock section, operating room tents for the seriously wounded for one team of doctors to work in, and an operating room section for the moderately wounded making it possible for two teams of surgeons to work at the same time.

On the passenger deck we accommodated a pharmacy and a hospital section for 100 seriously wounded and 200 lightly wounded.

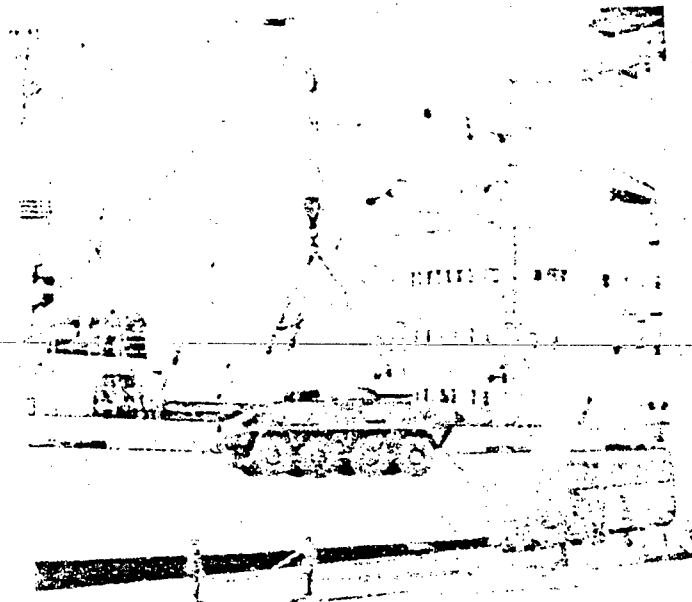
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Page 15 of 33 Pages

Figure 7. Loading equipment using the transport's cargo boom



TS # 778500
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~~TOP SECRET~~

~~TOP SECRET~~

Page 16 of 33 Pages

The complement of medical personnel, the ship's equipment, and the reserves of medicines ensured skilled medical assistance and treatment were provided during the period of the transporting. When necessary, a hospital ship can be used as a stationary hospital.

The wounded were evacuated from the hospital ship to the medical motor transport using a variety of means. The lightly wounded were evacuated using an ordinary passenger gangway and a combined chute and the seriously wounded were evacuated on stretchers of the "shile" type using the combined chute and a special platform as well as stretchers of the "sack" type.

Using the above-mentioned means, simultaneously, 300 simulated wounded were evacuated within two hours (the norm being three hours).

After the wounded were unloaded from the hospital ship, they were evacuated to hospitals of the front hospital base.

The evacuation means used in the exercise were developed by specialists of the Navy of the People's Republic of Bulgaria. These means have the following features.

The platform to evacuate the wounded and sick (Figure 8) consists of a frame twin-deck structure which can accommodate three stretchers of the "shile" type on each deck. For protection against bad weather it has a canvas cover and canvas sides. The platform is 950 millimeters high, 2,000 millimeters wide, and weighs 450 kilograms. The platform is taken off a ship by a vehicle-mounted crane or by a ship's boom. Six wounded and sick are evacuated within 10 minutes.

The combined chute (Figure 9) permits evacuation from a ship whose deck is not more than 2.5 meters above the mooring place.

The chute is constructed in the form of an all-metal gangway with high sides. The bottom of the chute has guide strips for the evacuation of the seriously wounded on stretchers of the "shile" type equipped with wheels. This design gives us the capability of evacuating 40 seriously wounded or 120 lightly wounded within 60 minutes.

TS # 778500

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Page 17 of 33 Pages

Figure 8. Platform to evacuate wounded from a ship

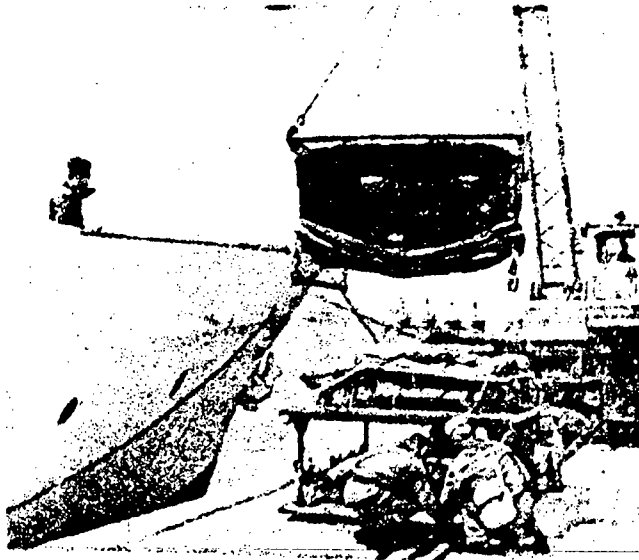


Figure 9. Using a combination chute when evacuating wounded on stretchers of the "shile" type



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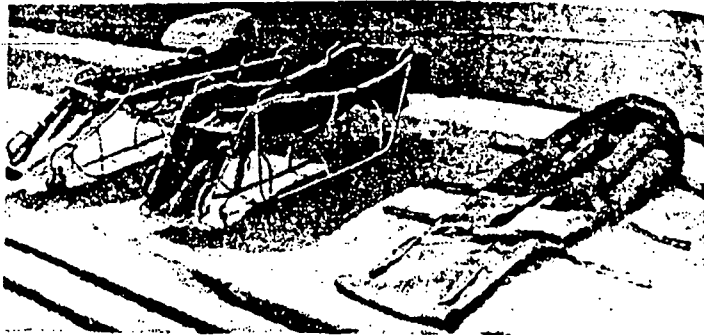
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Page 18 of 33 Pages

Stretchers of the "sack" type are made out of waterproof material and ensure that the wounded float in a vertical position. Their unloading can be carried out by a ship's cargo boom or by cranes. They are evacuated in the vertical position, and therefore stretchers of the "sack" type are equipped with attachment straps. These stretchers are an efficient means of evacuation from submarines and from ship compartments having small hatches.

Figure 10 shows two "shile" type stretchers and one "sack" type stretcher.

Figure 10. "Shile" and "sack" type stretchers



TS # 778500
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~~TOP SECRET~~

Page 19 of 33 Pages

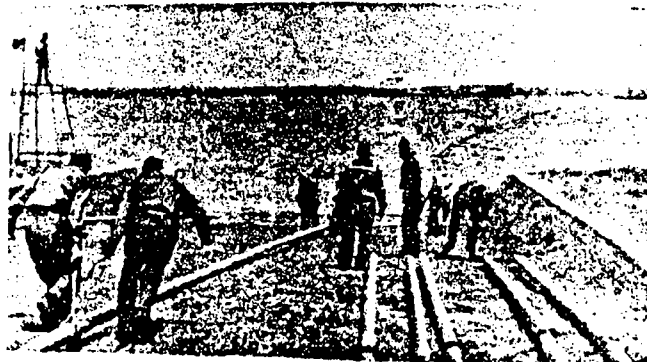
At the roadstead unloading sectors, fuel, equipment, and materiel were unloaded from the transport ship to an open beach.

The roadstead unloading of fuel was effected from a tanker lying in the roadstead 600 meters away from the shore. In order to receive the fuel from the tanker and deliver it further, in the unloading area a 1,500 cubic-meter branch of the front fuel depot was set up.

Unloading was carried out by means of two lines laid down from the depot's organic metal pipeline. To pump the fuel through the pipelines, the tanker's onboard pumps were used.

The pipeline was assembled on the beach and as the sections became ready for floating, they were pulled out by a towing launch (Figure 11). It was mated to the tanker using the organic flexible hose which is used to refuel the ship at sea. After the pipeline was filled with fuel it was submerged to the sea bottom, thereby providing conditions permitting normal operations when sea wave conditions go up to mark four, whereas mounting the pipeline on floats renders its operation unreliable even when sea wave conditions are up to mark two.

Figure 11. Starting up the pipeline with a towing launch when preparing for roadstead fuel unloading from the tanker



TS # 778500
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Page 20 of 33 Pages

In the exercise, a team made up of 10 men laid down one line of the pipeline in 25 minutes. The unloading capability of such a line is 60 tons per hour.

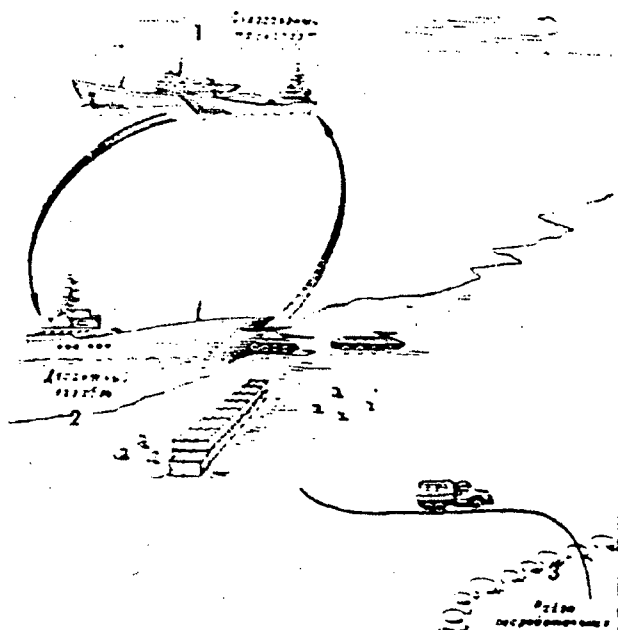
Actions of a maritime loading-and-unloading area were carried out by means of a tactical-special exercise on the roadstead unloading of combat equipment and materiel from a transport ship (Figure 12).

Roadstead unloading was accomplished by six landing ships. Using cargo booms, the transport loaded from both its sides two landing ships at the same time.

In the course of the exercise, with the transport up to 1,000 meters away from the shore, 38 items of combat equipment and 600 tons of materiel were unloaded in 16 hours.

The timely preparation of the teams, ships, and personnel of the subunits that were transported, as well as of the area's territory and water area ensured success in the operations of the maritime loading-and-unloading area (MPVR).

Figure 12. Organization of the roadstead unloading of combat equipment and materiel from the transport



- Legend:
- 1 - cargo-carrying transport
 - 2 - landing ship
 - 3 - concentration area

TS # 778500
Copy # 2

TOP SECRET

~~TOP SECRET~~

Page 21 of 33 Pages

Preparing maritime loading-and-unloading areas, as shown by the exercise, may involve: mobilization measures on creating an MPVR headquarters and on registering ships, mechanical means for loading-and-unloading work, and servicing personnel; carrying out reconnaissance activities on the shore and reconnoitering the sea bottom in the roadstead unloading areas; preparing routes to the beach; and organizing the road traffic control service. It is very important to organize reliable cover for the MPVR against enemy strikes from the air and from the sea, and also to organize the area to prevent possible actions by sabotage groups.

The problems of eliminating the aftereffects of an enemy nuclear attack against the troops in the course of the offensive operation were worked out in the tactical-special exercise of a motorized rifle regiment where a separate medical detachment, a chemical defense company, and a divisional technical workshop were brought in.

This exercise was held in a situation wherein, as a result of enemy nuclear strikes delivered against a division executing a march towards the front line, a portion of the subunits of a motorized rifle regiment found themselves in a center of mass destruction.

In order to eliminate the aftereffects of the nuclear strike, by decision of the division commander a chemical defense company and the division technical workshop were brought into the area of the center of massive losses. And in this case, we also set up a separate medical detachment which had been in the reserve of the operational formation.

Work on eliminating the aftereffects of the nuclear attack in the center of mass destruction was accomplished by the forces of the composite detachment which, after conducting reconnaissance and determining the boundaries of the zone of contamination, rendered the assistance needed and evacuated the wounded and the damaged equipment.

The wounded were evacuated to the separate medical detachment.

The seriously wounded were evacuated from the center by ambulances and armored personnel carriers of the detachment, but

TS # 778500
Copy # 2

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~~TOP SECRET~~

Page 22 of 33 Pages

the lightly wounded walked out with the assistance of soldiers of the detachment.

The separate medical detachment (OMO), deployed in the area of the center of mass destruction, ensured that skilled medical assistance was rendered to the wounded and provided for their evacuation to a hospital of the front hospital base.

The deployment and work of the OMO was carried out in accordance with the scheme that has been universally adopted in all allied armies.

The organizational structure of the OMO and its supply of equipment and medicine and drugs enables it to render skilled medical assistance, in accordance with vital signs, to 500 wounded and sick per day. Equipping the OMO with an operating room produced in the People's Republic of Bulgaria and mounted on a trailer cuts the deployment time in half, increases its capacity, and enables the separate medical detachment to work in two areas at the same time.

In the area of the center of mass destruction the forces of the chemical defense company set up a decontamination treatment point (PUSO). The training of its personnel and the equipment with which it is supplied permitted the PUSO to have this productivity per hour: in decontamination treatment -- 190 to 200 men, and in special treatment -- 48 to 56 units of armored equipment. The decontamination of equipment was carried out using high-pressure streams of water which, in comparison with the conventional method, reduced by a factor of 10 the time required to decontaminate one vehicle.

During the exercise the decontamination of various types of equipment required the following times: a tank -- 20 minutes, a truck -- 10 to 15 minutes, and artillery piece -- eight to 10 minutes. The exercise revealed that when personnel of the PUSO are adequately trained, decontamination treatment can be carried out in shorter periods of time.

In order to repair and restore damaged equipment and weapons in the area of the center of mass destruction we deployed a division technical workshop. In a period of three hours in an area of 0.6 to 0.7 square kilometers we set up sites for the

TS # 778500
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Page 23 of 33 Pages

repair of armored and vehicle-tractor equipment, artillery and radar weapons, communications means, and chemical equipment and weapons, and a site for special work.

The make-up of each site was based on special trucks with the necessary equipment as well as open areas or tents for the performance of the repair work.

When repairing equipment, we successfully used instruments and devices developed in the workshops. These instruments and devices decreased the periods of time required to fulfil individual jobs. For example, the instrument to check the tank stabilizer permitted us to check all of its parameters at the same time and the device for boring the sleeve of the balancer permitted us to carry out three operations at one time.

In the course of the exercise it was shown that the workshop had the following repair capabilities per day: six running or one to two medium repairs on armored equipment, 12 to 15 running or two medium repairs on trucks, two medium repairs on artillery pieces and 10 medium repairs on optical instruments, 38 medium repairs on small arms, one to two running repairs on engineer equipment, and up to 10 running repairs on communications equipment.

The problem of the organization of the medical treatment of the wounded and sick was worked out in a tactical-special exercise with a mobile hospital base. The exercise was conducted in a situation wherein the enemy had delivered nuclear strikes against troops and installations in the rear area of the front, and as a result, had created centers of mass destruction.

In the base area we realistically deployed a sorting hospital, a multi-function hospital, and a sanitary-antiepidemic detachment.

The above-indicated medical facilities carried out the reception of the wounded and sick, provided them with skilled medical assistance, accomplished evacuation to the interior of the country, and also carried out sanitary-hygiene and antiepidemic measures among the troops and in the rear zone.

TS # 778500
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Page 24 of 33 Pages

An enemy nuclear attack may give rise to a great number of wounded with multiple injuries. Therefore, in the opinion of the exercise participants, multi-function hospitals, which are a new type of medical treatment facility, will be extremely important. Not only can they operate as part of the base, but they can also operate independently, which is very important in mountainous wooded terrain.

All of the front medical facilities deployed in the exercise worked in accordance with their functional purpose. Personnel fulfilled their tasks in a skilled manner under conditions of a massive influx of wounded.

In addition to being fitted out with the medical equipment universally accepted in the allied armies, in the exercise the hospitals used bicycle-wheeled handcarts, which came from the hospital base and were made in medical facilities of the Bulgarian People's Army, for the intra-hospital transporting of the wounded (Figure 13) as well as new assemblies of ambulance equipment for the refitting of passenger buses taking into account the requirements of the medical service (Figure 14). The time required for a two-man team to refit a bus was two hours.

In the concluding phase of the TRANZIT-74 exercise a number of tactical-special exercises were conducted related to the restoration of the lines of transportation and the ensuring of uninterrupted military shipments.

The special feature of the situation in this period was the fact that the troops fulfilled their subsequent tasks under conditions of being separated from their supply bases and of having their lines of transportation considerably damaged. Sections of passes, large bridges, main road junctions, and sections of the pipelines had been damaged.

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Page 25 of 33 Pages

Figure 13. Handcart for the intra-hospital transporting of wounded

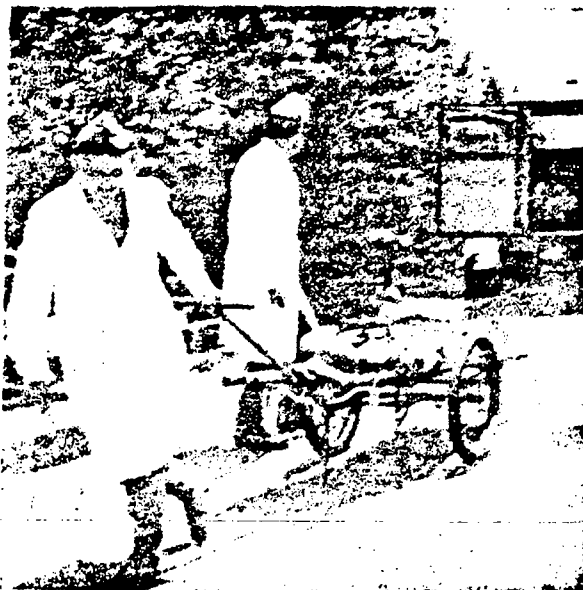
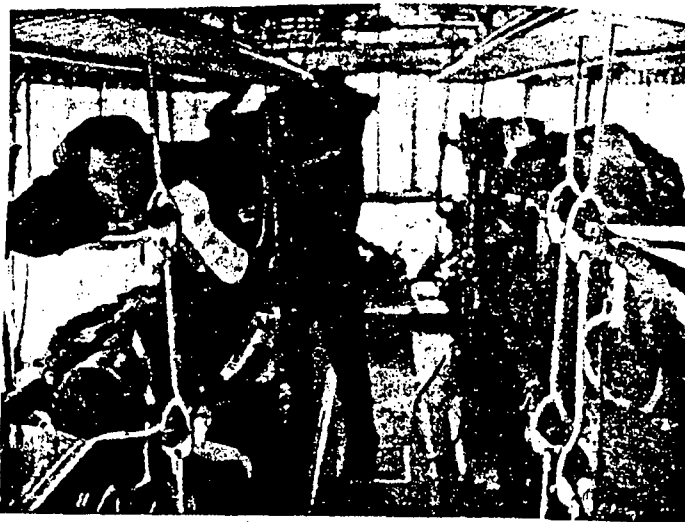


Figure 14. Assemblies of ambulance equipment for the refitting of passenger buses



TS # 778500
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TOP SECRET

Page 26 of 33 Pages

The restoration of the damaged lines of transportation on the principal axes of action of the troops was accomplished by forces of the railroad, road, and pipeline units and of the special contingents. On the most important axes they used high-speed methods of restoration utilizing prefabricated and demountable bridge structures and sets of field metal pipelines.

Personnel of a company of a pipeline battalion accomplished the work of laying a 10-kilometer line section of a pipeline, of eliminating a breakdown on the pipeline route (Figure 15), of restoring a section damaged by a sabotage group, and of extinguishing the fire which resulted from this.

Two tactical-special exercises were devoted to road support for the troops in the course of an offensive operation.

Figure 15. Eliminating a breakdown on the pipeline route



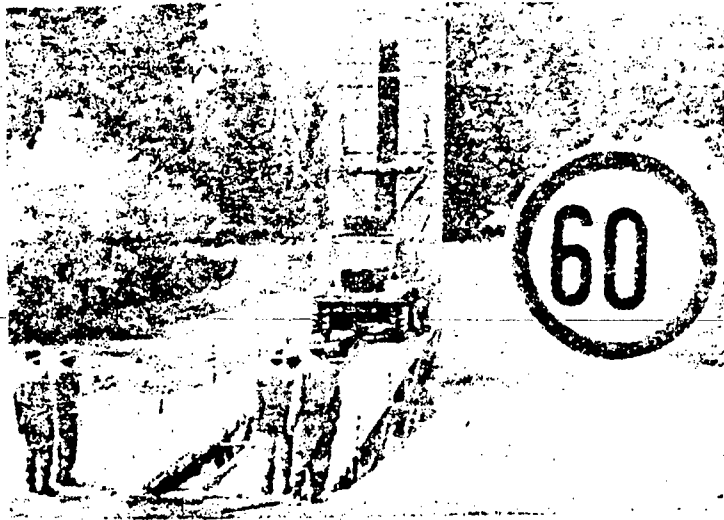
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Page 27 of 33 Pages

Figure 16. Laying a heavy mechanized bridge



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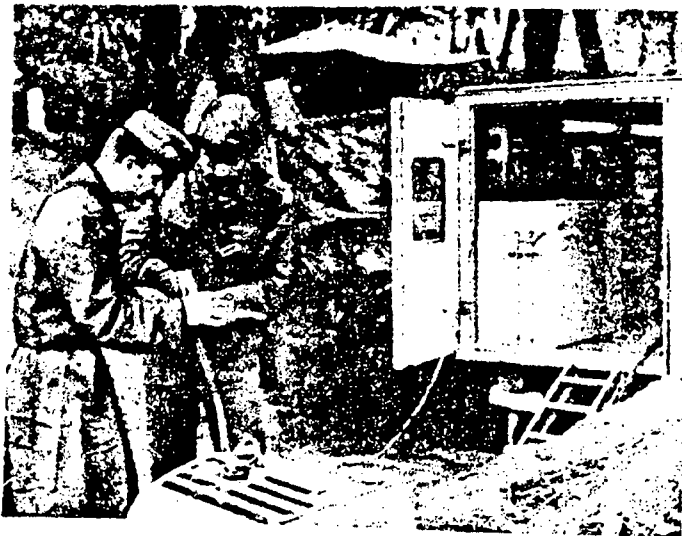
Page 28 of 33 Pages

In one exercise a subunit of a bridge company accomplished within 40 minutes (60 to 70 minutes being the norm) the assembly of a temporary bridge 42 meters long (Figure 16) from structures of a heavy mechanized bridge (TMM-3) on a bypass around a permanent bridge crossing destroyed by the enemy.

In the other exercise we worked out several of the problems of organizing the road traffic control service on a military vehicle road. During this exercise a battalion dispatcher and traffic control point (DKPP), made up of six men set up in a specially equipped truck (Figure 17), worked realistically and the following servicing points of the road traffic control battalion were in operation: a ration distribution point with supplies for 3,600 daily rations and with 28 to 40 rest places; a medical point with an out-station having 10 to 15 beds and an isolation ward having two to five beds; a technical assistance point capable of accomplishing one to three running repairs per day; and a refuelling point capable of refuelling 50 to 100 trucks per day.

We devoted to the restoration of traffic on a damaged section of the railroad an exercise by subunits of railroad troops which carried out during the exercise the construction of a temporary bridge and of the approaches to it.

Figure 17. Dispatcher and traffic control point on a military vehicle road



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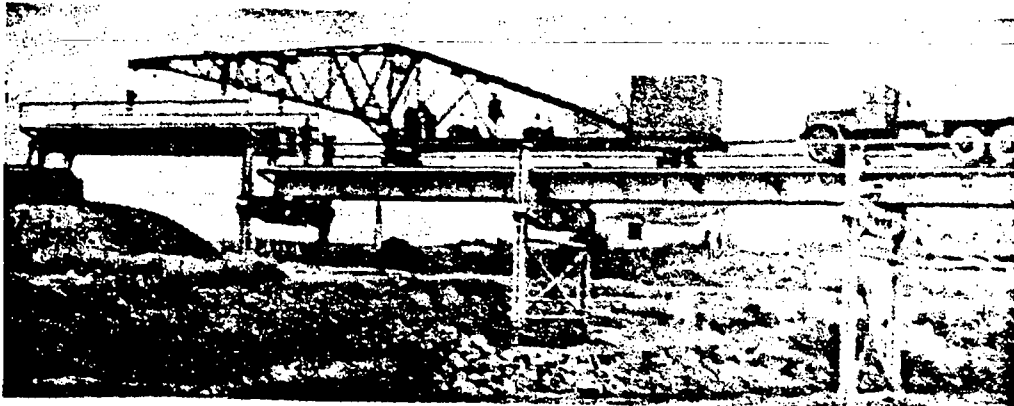
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Page 29 of 33 Pages

The mechanized construction battalion, in accordance with the schedule, constructed approaches 820 meters long in two days. The prior construction of the approaches permitted the bridge company to construct within 30 hours a railroad bridge 100 meters long from an REM-500 repair and maintenance bridge set (Figure 18).

Figure 18. Completing the assembly of a railroad bridge from components of the REM-500 repair and maintenance bridge set



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Page 30 of 33 Pages

As is well-known, providing for the rapid unloading of troops and materiel from railroad transport is one of the key tasks. In the exercise in connection with the disruption of through movement on the railroad, we worked out the unloading of a troop train with heavy equipment at an intermediate point. Twenty tanks and one tank recovery vehicle were unloaded in 10 minutes (Figure 19) using a temporary platform made of rails and railroad ties. It took a team of 30 men six hours to construct this platform.

At the unloading station ammunition and other materiel was transferred from railroad cars to trucks using means of mechanization. The servicing battalion of the front forward base transferred cargo from 10 railroad cars at the same time (Figure 20).

Figure 19. Unloading tanks using a temporary platform



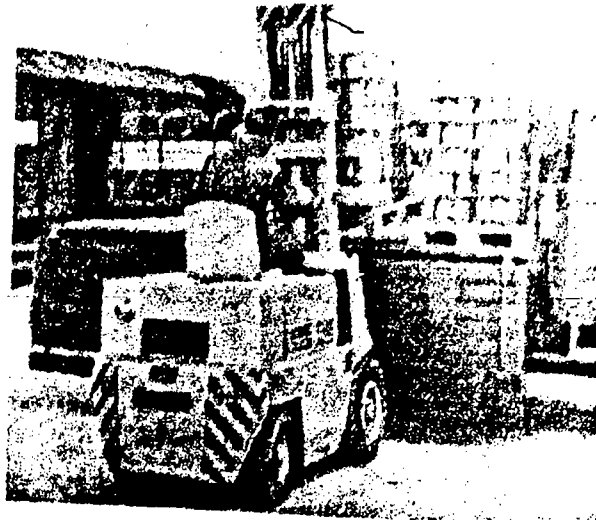
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Page 31 of 33 Pages

Figure 20. Transferring materiel from railroad cars to trucks using means of mechanization



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Page 32 of 33 Pages

Actual practice verified the fact that in transferring ammunition in packages (a package of four boxes weighs 340 kilograms) from a platform with the use of hand-carts and ramps, up to 10 minutes were expended in loading one truck (a ZIL-130 truck holds 15 packages) when four loaders are working, and 40 minutes were expended in unloading one railroad car (50 packages).

A team consisting of three men required up to 12 minutes to load one truck with rations in box containers on pallets (the pallet dimensions being 1,200 x 800 millimeters, a package and pallet weighing 550 kilograms) using a forklift. The unloading of one railroad car (a railroad car holds 30 pallets, a ZIL-130 truck holds six pallets) was accomplished in one hour. Packages were conveyed from the railroad car to the forklift using a manual hydraulic trolley.

Armored equipment was transferred from the railroad cars to the trucks on a fixed platform using pallets (pallet dimensions being 1,240 x 835 x 970 millimeters) with packages (weight of the package with pallet being 700 kilograms) and electric lifts of Bulgarian manufacture equipped with a fork rack. The unloading of one railroad car (containing 30 pallets) was accomplished in 75 minutes, the loading up of one truck with six pallets required up to 15 minutes.

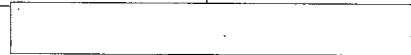
Exercise experience has revealed that the use of standardized pallets, forklifts, and electric lifts allows us to reduce by a factor of 1.5 to two the unloading time and the number of personnel in a loading-and-unloading team.

The tactical-special exercises carried out during the TRANZIT-74 operational command-staff rear services exercise, in the opinion of the participants, allowed our staffs to work out comprehensively and in depth the problems of rear services troop support and rear services control in an offensive operation.

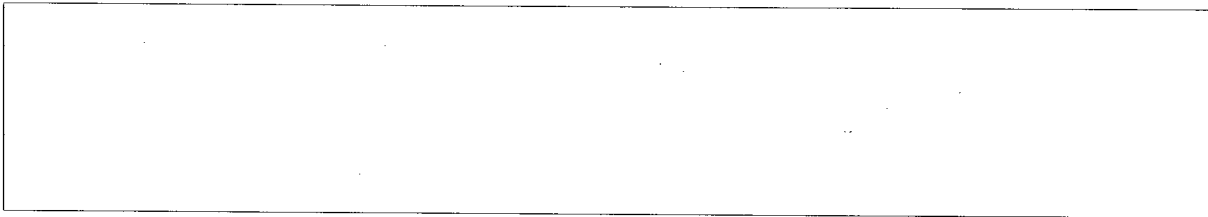
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Page 33 of 33 Pages



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